Jeepers Peepers Data Analysis & Essay Activity, Grades 7-8

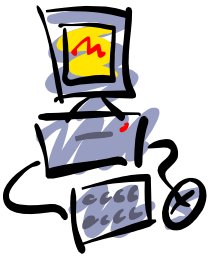
Swimming, boating, and fishing attract people from all over the northeast to Maine lakes during the summer. In winter too, Maine lakes offer skating, snowmobiling and ice fishing until late winter when the ice starts to melt. In olden days, people used lakes instead of roads and often floated logs to mills when there was no ice. The day when all the ice disappeared is called "ice out". These people who used the lake for work started keeping track of "ice out" as early as the 1880s.

Today, scientists continue to record the date of "ice out" using Julian days. Instead of using months they just number the days starting with January 1 as day one. February 1 would be day 32 and March 1 would be… well that depends if it is a leap year. The U.S. Geologic Survey (USGS) has compiled ice out dates for 29 lakes in New England in a report available on the web.

Essay Question

Is spring weather coming earlier each year? Using USGS data from Maine DEP Lakes, provided on the Maine web site, your task is to answer this essay question in 500 words or less; be sure to include your ideas along with supporting evidence (details) from the data and graphs. Use the following four steps to guide your analysis and report format when writing your essay.

Step #1 Go to web page < http://www.maine.gov/dep/blwq/doceducation/jeepers/essays.htm#quest> and select the spreadsheet entitled: "ice out data" (Excel or Apple). Select two or more lakes and create an *XY scatter graph* for each. Put *"year"* on the X axis and *"ice out date"* data on the Y axis. Add a trend line or trend line equation to the graph.* Use the trend line equation to determine if ice out dates have changed over time. Describe how "ice out dates" have changed over time in each of the lakes you selected.



** To create a trend line or equation: In Excel, right click on one point data on the graph and select add a linear trend line. In Appleworks, see other instructions for trend line equations.*

Ice out on Sebago Lake, spring 1985 (USGS)

Step #2: Using the data, "Average Spring Temperature", create an XY scatter graph and trend line for the weather station that is closest to your lakes' locations. Again "year" should be on the X axis and "temperature (average March to May)" should be on the Y axis. Describe how the temperature trend has changed over time.

Step #3: Compare and contrast similarities and differences between the ice out data and air temperatures. Do you think this data shows a trend that may serve as an indicator of earlier spring time weather overall? Explain your thinking: describe at least three observations or inferences about the data.

Step #4: What other indicators might help you to answer the question: Is spring time weather coming earlier each year? Describe at least two possible indicators and explain your thinking. If you were a scientist continuing to investigate climate change, what additional research questions would you explore? Describe at least one new question for research.

Report Format

Use the following sample format to write your essay (500 words or less). Be sure to address the questions posed in 1-4 and provide supporting details for your ideas and inferences.

- **Introduction -**
  Briefly, what is this essay/ report is about?

- **Body -**
  -Describe your findings, graphs, and observations. (Steps 1-3)
  -What are some indicators of spring you would be interested in studying further?
  -What additional research could you do to investigate climate change further?
  (Step 4)

- **Conclusion -**
  Summarize your findings and observations.

Sample Graph of Ice Out Data